

Space News Roundup

Vol. 24 No. 20

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National Aeronautics and Space Administration

News Briefs

IBM computers chosen

The IBM Corp., Federal Systems Division, Houston, has been selected for negotiations leading to the award of a contract covering replacement of computers in the Mission Control Center. Under the proposed contract, IBM will provide and install upgraded computer systems in the control center and will provide operating system software, hardware and software integration and maintenance. The contract will provide for periodic upgrading and maintenance. The fixed-price contract is for a five-year period and is expected to be in the amount of \$6.6 million. Other bidders on the system were Amdahl Corp. and ViON Corp., both of Washington, D.C.

ESA rehearses flyby

The European Space Operations Center successfully simulated the Giotto probe's encounter with Comet Halley in an end-to-end test Oct. 14 and 16 of ground and spacecraft systems. It was the first of a series of tests which will take place up until the final dress rehearsal a few days before the encounter March 13, 1986. All of Giotto's scientific instruments have been exercised since the spacecraft was launched July 2. The two plasma analysers and the ion mass spectrometer aboard have already produced measurements of the solar wind and its composition, and the magnetometer aboard has observed the interplanetary magnetic field. Observations of the star Vega and of Jupiter and Earth by Giotto's camera show the system is functioning well. Giotto was more than 13 million miles from Earth this week.

Enterprise Dulles-bound

Orbiter Vehicle 101, the *Enterprise*, will be flown to her final exhibition place Nov. 16 after many months of touring the nation and the world. Now at the Kennedy Space Center, the *Enterprise* will be transported aboard the Shuttle Carrier Aircraft to Dulles International Airport near Washington, D.C., where she will go on permanent display as the centerpiece of an adjunct facility of the National Air and Space Museum. *Enterprise* was used for the Approach and Landing Test Program, and for form and fit check tests at both the Kennedy and Vandenberg Air Force Base launch facilities.

Clouds to be visible

Artificial clouds will be visible east of the Mississippi River, cloud cover permitting, when barium is released by a sub-orbital rocket launched out of the Wallops Flight Facility in mid-November. The window for the experiment extends from Nov. 13 to Nov. 22. The objective is to pave the way for the Combined Release and Radiation Effects Satellite, to be launched in July 1987 from the Space Shuttle. The reaction chemistry to be tested on the sounding rocket flight will provide baseline data on expected yields, vapor expansion velocities and other parameters for CRRES.



STS 51-A Flight Directors Lee Briscoe and Gary Coen, and CapCom Fred Gregory, sign off on a souvenir for the German Spacelab D1 team. The pumpkin, marking the first Halloween flight ever in the U.S. program, will go back to Germany as a memento of a busy week.

FEPC dual negotiations announced

NASA has selected Boeing Services International, Inc., Cocoa Beach, Fla., and United Technologies Corp., Hamilton Standard Management Services Co., Houston, Texas, for final, dual negotiations leading to award of a single contract for the flight equipment processing effort at the Johnson Space Center, Houston.

The contract, known as FEPC will cover a basic period of 3 years, plus a single priced option for an additional 2 years, and will be for services expected to begin in January 1986. Ultimately, follow-on awards could result in a total contract period of 15 years.

The cost of the effort is yet to be negotiated. Johnson Space Center will manage the work under a cost-plus-incentive/award-fee contract arrangement which includes incentive fee on sound cost management and an award fee on the basis of performance.

The contractor selected after final negotiations will assume responsibility for receipt, launch preparation and post-launch activities relating to the overall processing of crew-related flight and flight type equipment required to support the Space Transportation System program. The primary function of the flight equipment is to support the flight crew in its daily operation of the Shuttle orbiter vehicle.

The contractor will process/resupply individual equipment items in preparation for launch and will operate and maintain assigned facilities and support equipment required for the successful processing of the equipment. Included are: Extravehicular Mobility Unit (space suit), Food and Medical Systems, Communications Equipment, Display and Control Equipment and other miscellaneous items.

This competitive procurement consolidates, under one contract, work now being performed by 16 firms under 19 contracts.

51-1 bypass operation lauded

Hughes' Syncom F3 reaches GEO

The \$85 million communications satellite was a drifter in low Earth orbit for six months, passing in and out of the shadow of the planet, being subjected to frigid temperatures it was not designed to withstand.

During the course of those six months, the satellite underwent a series of ad hoc repair efforts, being whacked and prodded with a makeshift tool, and later, being plucked out of space by hand for an on-orbit electronic bypass operation.

For a complex device manufactured under clean room conditions, these were, by any description, extraordinary measures. And they worked.

On the morning of Oct. 28, at 8:53 a.m. Pacific time, a signal was sent from the Hughes Communications ground control center in El Segundo, California, to a ground station on the island of Guam. From Guam, the signal was relayed

to low Earth orbit, and the rocket motor on Syncom 3 roared to life for 64 seconds, sending the errant satellite towards geosynchronous Earth orbit.

"We really nailed it," said Albert Wheelon, President of the Space and Communications Group, Hughes Aircraft Co. "This is a super day." The successful firing was a tremendous boost for Hughes. Syncom F4, deployed during the same Shuttle mission on which the F3 repair was done. STS 51-I, developed problems in its UHF system after arriving at geosynchronous orbit and was later declared failed. For Hughes, the news on F3's successful motor firing was welcome indeed. "There were just a lot of hysterically happy people," Wheelon said.

On Nov. 1, Hughes began activating the satellite and commenced the month-long job of testing it before certifying it ready for opera-

tions for the U.S. Navy. The satellite is about two degrees from its final position directly above the equator over the mid Pacific Ocean, and is expected to be turned over to the Navy by around the first of December.

If it continues to perform well, and the expectations are high that it will, Syncom 3 will become the first satellite to have been placed in service as a result of orbital repairs.

For the people who worked to make those repairs possible on STS 51-I, the news was nothing but good last week.

"It's super," said 51-I Lead Flight Director Jay Greene. "We knew going in that it was a dicey operation. It was either going to blow up when they fired the rocket, or it was going to work. The people who made this happen, at Hughes and at JSC, just did a hell of a job."

James "Ox" van Hoften, who with Dr. William Fisher repaired the satellite during one of the

longest EVA's in history, said he was "ecstatic, to say the least" when he heard the news. "We just got back from Hughes last week," he said, "and those people were really happy. It really makes you feel good."

David S. Grissom, who acted as project manager for the salvage effort for the Shuttle Program Office, knew the burn was coming on the 28th but first heard it had gone well from a television news report. "I think you could safely say I was pretty excited. We're getting about to that point in the activation process where Syncom F4 had its problem, so once F3 gets past that failure mode, I'll be a lot happier. But in terms of what JSC did, everything has gone absolutely 100 percent," he said.

The last satellite for the Navy program, Syncom F5, is expected to be launched aboard the Shuttle next year, Hughes said.

Bulletin Board

Jackson to discuss SPACEHAB

Bruce Jackson, former Chief of the Systems Engineering Division and now President of Jackson and Associates, will discuss SPACEHAB at the next monthly forum sponsored by the Houston Section of the American Institute of Aeronautics and Astronautics. SPACEHAB is a privately financed project to build modules which would attach to the airlock of Shuttle Orbiters and increase the amount of pressurized working space. The multi-purpose modules are designed to add as much as 1,000 cubic feet of living and working space and could contain as many as 100 standard middeck lockers. SPACEHAB, Inc. is negotiating with NASA to provide space in the module to commercial users. The forum will be held from 11:30 a.m. to 12:30 p.m. Tuesday, Nov. 19, at the Rockwell Bldg., 1840 NASA Road 1. The talk is free and open to the public. Escorts and badges can be obtained at the reception desk inside the east door of the building. For more information, call Garland Bauch at x5844 or Russ Filler at 333-0831.

Singer-Link crafts fair set

The Singer-Link Employees Recreation Club will hold a Christmas Crafts Fair from 9 a.m. to 6 p.m. Saturday, Nov. 23 at Galveston County Park. The fair will be held in the Park's main building next to the outdoor pavilion. The event is free and open to the public, and refreshments will be available. For more information, call Sandy Touchton at 280-4088.

U.S. — India ties to be celebrated

A celebration of the technical and cultural ties between the United States and India will be held from 4:30 to 8 p.m. Nov. 23 at Bldg. 2 Auditorium. "NASA had made major contributions toward creating and promoting international understanding," said Dr. Kumar Krishen, the event organizer. "Advancements in weather forecasting, resource monitoring, communications and computers are some examples of NASA contributions." The event will include Shuttle film highlights, music and dance and refreshments. For more information, call Krishen at x2872 or 326-2282. The event is being co-sponsored by the Employees Activities Association and the Equal Opportunity Program Office.

PC Organization to meet

The Bay Area PC Organization (BAPCO), the local IBM-PC users' group, will hold its next monthly meeting at 7 p.m. Tuesday, Nov. 19, at the Sheraton King's Inn on NASA Road 1. BAPCO meets regularly on the third Tuesday of each month. For more information, call Earl Rubenstein, x3501 or Jack Calvin, 326-2983.

Two blood drives remain in '85

Two blood drives remain on the schedule for the rest of 1985 as the year's slate of 18 blood drives winds to a close. The remaining two will be held Dec. 5 and Dec. 12 at the Gilruth Recreation Center. The former is being sponsored by JSC, the latter by Lockheed. To schedule an appointment for Dec. 5, call Helon Crawford, x5238, or Bob Jones, x6251. To schedule an appointment for Dec. 12, call Bob Bose or Janelle Bennett at 333-6607.

Shop Talk

News from around the Center

They may look like pieces of a Space Station mockup, but the cylinders out behind Bldg. 14 on the Antenna Test Range actually are pieces of the old Laser Optical Chamber. The Air Force expressed an interest in the facility, and work has been underway for several weeks to remove the 265-foot-long chamber, cut it into pieces and transport the sections to Kirtland Air Force Base, New Mexico. Each piece is 14 feet in diameter and weighs 35 tons, according to **Keith McQuary**, Deputy Chief of the Plant Engineering Division, who was Project Manager for the move. . . . **Bill Robbins**, Audiovisual Manager for the Public Affairs Office, has been released from St. John's Hospital following a mild heart attack he suffered Oct. 24. He hopes to be back at work in several weeks. . . . Footings have been laid for the new Mission Operations building next to Bldg. 29 as work progresses on the first new office complex to be built here since the 1960's. About 140 Mission Ops folks hope to move in after the first of the year. . . . JSC Deputy Director **Robert Goetz** has been named a Fellow of the American Astronautical Society, joining the highest ranking level of membership within that organization. Goetz, who came to JSC from the Langley Research Center, has been Deputy Director since 1984. . . . Another important honor going to a JSC employee was the Science Teachers Association Business and Industry Award, given last week to **James Poindexter**, JSC's Educational Programs Officer. Poindexter has been instrumental in setting up JSC's Teacher Resource Room in back of the Visitor Center, as well as overseeing the many workshops and outreach programs the Center conducts for educators. . . . The walls are back in place at the Gilruth Recreation Center gym. The old sheetrock walls, upon which countless basketballs, volleyballs and flying bodies have impacted, finally began to give way. The new walls "are really solid," according to Recreation Director **Jack Brown**. The facelift at the gym is the latest improvement at the facility, with more to come. Designs are being drawn up for a fourth softball field and the parking lot on the north side of the building is to be enlarged with 60 new parking spaces. Long range plans call for another picnic pavilion and a large covered pavilion capable of being used for basketball, dances, beer busts and other activities. . . . JSC's Combined Federal Campaign is well underway, with the Center having reached about 65% of its \$245,000 goal for 1985. The drive to support United Way charities lasts through Nov. 21. Contribution forms are available in each branch.

Send items for Shop Talk to the Roundup, Code AP3, x5111.

NASA
Lyndon B. Johnson Space Center

Space News Roundup

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Editor: Brian Welch

Four to receive 1985 FBA outstanding employee awards

Four JSC employees have been selected by the Houston Area Federal Business Association as Outstanding Employees of the Year in different categories.

The four are Jesse T. Adkins Jr., Production Controller in the Planning and Scheduling Office, Technical Services Division; Lillian M. Hudson, Secretary to the Deputy Manager, National Space Transportation Systems Program Office; Freda M. Lowe, Employee Development Specialist in the Personnel Office; and William J. Nunnery, Mail and File assistant in the Correspondance Section, Management Services Division.

The four were nominated for their awards by JSC Director Gerald D. Griffin.

Adkins was selected as the Outstanding Employee of 1985 in the craft category. His duties include planning, scheduling and coordinating the fabrication of aerospace components. His job requires expertise in various machine processes, knowledge of materials required for the manufacture or repair of prototype or complex equipment, and knowledge of related costing and scheduling techniques.

Adkins, a native of Houston, began his career with JSC in 1964. He has been involved in the community with the Boy Scouts, the Bay Area Youth Soccer Association and in the Pee Wee Leagues, Little Leagues and Colt/Pony Leagues. Adkins is also Music Director for the local Church

of Jesus Christ of Latter Day Saints.

Hudson was selected as the Outstanding Employee of 1985 in the clerical category. A recent graduate of the Certified Professional Secretary course, she is one of three Professional Secretaries at JSC. Her job requires daily contact with all levels of NASA management and a high degree of knowledge of Program Office operations. Hudson recently completed a secretarial seminar at Columbia Lakes, Texas, for Senior JSC women. "She is considered to be one of the more outstanding secretaries at JSC," Griffin wrote in the nomination.

Hudson's tenure with the Civil Service goes back to 1949, when she worked for the National Advisory Committee for Aeronautics at the Langley Aeronautical Memorial Laboratory, now the Langley Research Center. She began her career at JSC in 1969. She is the mother of five children and has been active in community affairs in Dickinson.

Lowe was selected as the Outstanding Employee of 1985 in the administrative category. Her job responsibilities include management of the secretarial and clerical training programs at JSC, direction of a number of student programs, and coordination of the Administrative Intern Program. She has also become involved in a number of other activities, including the Center's minority clerical recruit-

ing team, the NASA Employee Team (NETs) program, and the Federal Women's Program Committee.

Lowe was a primary contributor to the creation of the Seminar for Senior Secretaries Program, a four-day retreat at Columbia Lakes held in August. Based on the success of that gathering, JSC now plans to offer the retreat on a regular basis. Lowe also saw the need for additional training in basic secretarial and communications skills for JSC clerical workers, and set up a program with local junior colleges for courses in basic English, office management and other subjects to be taught on site.

She currently serves as Co-chairperson of the Office Education Advisory Board for the Houston Independent School District, as well as Chairperson of the OE Advisory Board for Clear Lake High School.

Nunnery, with a 44-year Civil Service career, was selected as the Outstanding Employee of 1985 in the length of service category. Nunnery served in the U.S. Army from September 1940 to September 1961.

In February 1962, following his retirement from the Army, he accepted employment with the Space Task Group at the Langley Research Center in Hampton, Virginia. He relocated to Houston in April 1962 and is still a part of the NASA team at JSC.

Pad B accident report complete

A NASA Mishap Investigation Board has completed its review of the Sept. 18 accident involving the payload bay access equipment at Space Shuttle launch Pad B at the Kennedy Space Center.

The accident occurred when three sections of a telescoping tube assembly located on the Rotating Service Structure (RSS) at Launch Complex 39's Pad B fell while undergoing extension to incorporate a planned modification.

The telescoping platform support system is used to provide access for technicians to various areas of the cargo bay of a Space Shuttle orbiter while it is on the pad. Binding of the telescoping sections was experienced during extension and retraction tests and replacement of bronze bushing with roller bearings was about to be done when the accident occurred.

The falling tubes struck an Orbital Maneuvering System pod cover on the Rotating Service Structure (RSS), knocking it to the pad surface and doing additional minor damage to the RSS as they fell.

Initially the total damage was estimated at \$345,000. This includes \$244,000 damage for the OMS pod cover and the remainder for damage

to the telescoping tubes and other miscellaneous damage. There were no injuries and there will be no delay in the operational readiness of the launch pad.

Programmatic decisions were made following the accident that the OMS pod covers are no longer required because the total Thermal Protection System modification on shuttle orbiter OMS pods will be completed prior to Pad B usage, and the Access Platform for Pad B will be reconfigured similar to the operational Pad A system.

As a result of these decisions, the effort to recover from this mishap involves only repairing the miscellaneous damage to the Pad B Payload Changeout Room and reconfiguring the Access Platform so that it functions in a similar manner to the one on Pad A, which has no telescoping tube.

The actual recovery cost is estimated to be \$90,000.

Pad B, the second of two Space Shuttle launch pads at Complex 39, is to be certified ready for operational use in mid-December. The first launch scheduled for Pad B will be that of the 51-L mission, scheduled for Jan. 22, 1986. It will

mark the first operational use of the pad since the launch of the Apollo Soyuz Test Project in July, 1975.

The telescoping tube assembly consists of a large fixed steel tube measuring 18 inches by 14 inches by 20 feet long which was welded to the structure of the RSS. The four movable tubes vary in decreasing cross-section size to a 10 inch by 6 inch tube on which the hoist is attached.

In its report, the board found: "The immediate cause of telescoping tubes A, B and C falling was that the lifting surfaces were not maintained between the lifting plates on Tube D and the keepers on Tube C. This was the result of the bowing of Tube C and wearing and bending of its keepers. . . ."

"The keepers on the fixed tube failed under the dynamic loads caused by the striking of the Tube A stops when Tubes A, B and C fell. . . ."

The board recommended that "Future designs calling for lifting devices with telescoping tubes must be halted until an acceptable design is provided and sufficient testing is completed to ensure the satisfactory performance of telescoping tube assemblies. . . ."

Experiment uses levitation

The technique seems like something out of Buck Rogers or a Harry Blackstone magic show, but Dr. Delbert E. Day hopes it will be important to the future production of glass in space.

The University of Missouri professor hopes to know by year's end how successfully his Containerless Melting of Glass experiment performed on Spacelab D-1 last week.

In this study of how glass forms in space, Day's experiment made use of a state-of-the-art containerless processing technique known as acoustic levitation.

"Instead of holding the glass samples in position with a metal container, they were held suspended within a specially constructed acoustic levitator furnace appa-

ratus by means of 'walls' created by a sound field," Day told United Press reporter Tim Bryant.

"Essentially, the samples were placed inside a furnace, where they were melted and reformed without ever coming into contact with a container."

The process keeps contaminants from reacting with the glass, and may even allow glass to be produced from materials which would not be useful on Earth, Day said.

"Because this experiment features containerless processing, the interface between the glass and the container does not exist, and therefore substances which would not form glass on Earth might form glass in space," he said.

In addition to this facet of the

study, Day's experiment also seeks to learn what the physical properties are of glass made in space, and whether raw materials exported to a space factory from the Moon or an asteroid might one day be used in glass production.

"Another major aspect of this project is determining how the information gained from this experiment can be used to improve our glass manufacturing processes on Earth," Day said.

Day is Director of the Graduate Center for Materials Research at the University and a professor of ceramic engineering. He and his assistants will pick their flight equipment up at the Marshall Space Flight Center later this month.

Out of uniform



Although Dracula probably never got PCZ clearance, the costumes and the fun were authentic as employees around the Center observed Halloween last week. In Bldg. 2, publication library Omniplan employees Sheryl Malone, Gloria Sanchez and Anjali Jagtap, left, celebrated the holiday, while Linda Wilson of Ford Aerospace, above, right, brought her co-workers spider cakes which were, if not appetizing, at least artful. Elsewhere in Bldg. 30, at right, computer operators (left to right) Joan Kranz, Freda Williams and Diane Givens livened up the day.



Journalist will be next to fly

Five American journalists, in the running to become the first of their profession to fly in space, will be at JSC next April for medical exams and initial flight training leading to an assignment in orbit a year from now.

The journalist selected to fly aboard a Shuttle mission next fall will be the second person to go into space as part of NASA's Space Flight Participant Program. The first person selected to fly under this program, New Hampshire teacher Sharon Christa McAuliffe, is now at JSC undergoing preparations for STS 51-L in January.

The journalist will be selected through a nationwide application process conducted by the Association of Schools of Journalism and Mass Communication (ASJMC). The process will be organized on

a regional basis, with the nation divided into five regions. Eight candidates will be selected from each region.

From those 40 nominees, a national selection panel will recommend five for final consideration by NASA's Space Flight Participant Evaluation Committee, composed of seven senior Agency officials. The five are scheduled to be selected by April 4, 1986, and will be at JSC the week of April 6 to 14.

A final screening will be held at NASA Headquarters on the 14th, and the prime and backup will be selected April 15 or 16, with an announcement on the 17th.

Flight training at JSC is scheduled for May to August of next year, with a flight, as yet unspecified, to follow in the fall.

To be eligible, applicants must be U.S. citizens and must have five or more years of full-time professional experience as a reporter, correspondent, editorial columnist, newswriter, photographer, editorial cartoonist, etc. Freelance journalists must demonstrate an equivalent amount of published material or on-air time. The journalist must pass the minimum physical requirements established for the program, and must have approval of his or her employer. Government employees are not eligible.

The ASJMC is an association of deans and directors of 170 journalism and mass communications programs at colleges and universities in the U.S. and Canada. The central office of the ASJMC is located at the University of South Carolina.

Ladies weight training — Shape up and increase endurance in this class which meets Mondays and Wednesdays from 7 to 8 p.m. beginning Nov. 18.

Turkey Trot race — Entry blanks for the 2nd annual Turkey Trot race are available at the Rec Center. This 5-kilometer run will be held beginning at 8 a.m. Nov. 21. The cost is \$6 for early registration and \$8 the day of the race. T-shirts will be given to participants as part of the entry fee. Those not interested in T-shirts will be charged \$2 to register.

Weight safety class — This course is required for any person interested in using the weight room at the Rec Center. The class covers proper use of the machines and the safety aspects of the facility. The next available classes meet either Nov. 6 or Nov. 20 from 8 to 9:30 p.m. The cost is \$4 per person.

Defensive driving — Learn to drive safely and qualify for a 10 percent reduction in your auto insurance for the next three years. This class meets Nov. 16 from 8 a.m. to 5 p.m. at a cost of \$20 per person. Space is limited.

Furniture refinishing — Learn to bring wood back to life in this course which examines various kinds of woods, covers basic repairs and refinishing techniques. The class meets from 6:30 to 9 p.m. beginning Nov. 20 and lasts for four weeks. Students are advised to bring a chair or similar sized piece of furniture to the first class. The cost is \$35 per person.

Shorthand — The basics for reading and writing Gregg shorthand will be covered in this class, as well as building speed in the process. Students should bring a pen and shorthand notebook to class. This six-week course meets from 5:30 to 8 p.m. beginning Nov. 18. The cost is \$85 per person.

Aerobics — A specialized program designed to develop total fitness, this class will cover stretching and limbering and vigorous aerobic workouts. The class meets Tuesdays, Wednesdays and Thursdays from 4:15 to 5:15 p.m. beginning Nov. 12 and lasting for eight-weeks. The cost is \$30 per person.

D1 flight draws praise

The near problem-free flight of Spacelab D1 aboard STS 61-A is a harbinger of things to come. NASA Administrator James M. Beggs said, as Europe moves toward cooperation with NASA on the Space Station Program.

Mission officials in the U.S. and Germany expressed great satisfaction with the results of the 22nd Shuttle flight, which was the first chartered by another country. Scientists in West Germany called the mission "nearly perfect."

"We in Germany are very satisfied with this mission and we highly appreciate the performance of the Shuttle," said Herman Streuh, a department head with the West German Ministry of Science and Technology, which chartered the mission.

The 2.9 million mile voyage saw more than 70 experiments conducted in the two basic disciplines of materials processing and life sciences.

From Bonn, West German Chancellor Helmut Kohl praised the two German Payload Specialists aboard, Ernst Messerschmid and Reinhard Furrer, for "an enormous program of scientific work." The Chancellor said, "We are proud and happy to know you are happily back on Earth, safe and sound."

The landing at Edwards Air Force Base did not end the D1 experiments, however. Mission Specialists Bonnie Dunbar, Guion Bluford, and Payload Specialists Wubbo Ockels, Furrer and Messerschmid were

Challenger about 20 feet off the centerline of Runway 17 and back again during the landing rollout. At week's end, preliminary data from the test looked good, according to Frank Littleton, Assistant Manager



flown back to the Kennedy Space Center for a detailed two-week series of medical tests to study how their bodies react to coming back to Earth.

Commander Hank Hartsfield, who said "the mission went super well," flew back to Houston Nov. 6 along with Pilot Steve Nagel and Mission Specialist James Buchli.

The landing was the first in which the new nosewheel steering system was tested. The system steered

for Software. Shuttle Avionics Office. If the final analysis of the test is satisfactory, landings at the Kennedy Space Center will resume with *Columbia's* flight in December.

"The brakes look good," Office of Space Flight Associate Administrator Jesse Moore said on landing day. "We are very, very pleased with the test." Moore added that *Challenger* looked to be in excellent shape after the 111-orbit journey around the Earth.

Gilruth Center News

Call x3594 for more information

New in the Library

- "AIAA Computational Fluid Dynamics Conference, July 15-17, 1985. Proceedings," by AIAA.
- "AIAA Guidance, Navigation and Control Conference, August 19-21, 1985. Collection of Technical Papers," by AIAA.
- "AIAA 12th Atmospheric Flight Mechanics Conference, August 19-21, 1985. Collection of Technical Papers," by AIAA.
- "Aging and Cell Function," ed. by J. E. Johnson, Jr.
- "Artificial Intelligence: Concepts, Techniques, and Applications," by Y. Shirai.
- "Black Holes, White Dwarfs, and Neutron Stars," by S. L. Shapiro.
- "CAD, Principles and Applications," by P. C. Barr.
- "Comparative Guide to American Colleges for Students, Parents and Counselors," by J. Cass. (Reference use).
- "Computer Project Management," by C. Bentley.
- "Fiber Optic and Laser Sensors II: 1984 Conference Proceedings," by E. L. Moore.
- "Mechanisms of Creep Fracture," by H. E. Evans.
- "Mission to Mars: Plans and Concepts for the First Manned Landing," by J. E. Oberg.
- "Office Automation: Concepts, Technologies and Issues," by R. A. Hirschheim.
- "Productivity: Problems, Prospects, and Policies," by S. A. Levitan.
- "Satellite Microwave Remote Sensing," by T. D. Allan.
- "Understanding Microprocessors," by D. L. Cannon.
- "Underwater Acoustic System Analysis," by W. S. Burdick.
- "Women in Management," by B. A. Stead.

Roundup Swap Shop

All Swap Shop ads must be submitted on a JSC Form 1452. The forms may be obtained from the Forms Office. Deadline for submitting ads is 5 p.m. the first Wednesday after the date of publication. Send ads to Roundup, AP3, or deliver them to the Newsroom, Bldg. 2 Annex, Room 147. No phone in ads will be taken.

Property & Rentals

Sale/lease: Clear Lake waterfront condo, 2-1.5, new AC, W/D, outside storage, covered parking, \$625/mo. or \$67,500. 474-2948.

Sale/lease: League City 2-2.5 custom townhouse, FPL, garage, W/D, appliances, jacuzzi, lawn care, tennis, pool, etc. Mike, 280-4313 or 554-6378.

Lease: 2 units at Sunbird Lodge, Vail, Christmas week (Dec. 21-28), each unit sleeps 4-6, \$700/wk. ea. + deposit. 474-3839.

Rent: Galveston/Tiki Island, furn. new 3 BR home on canal, boat dock, fishing, etc., TV, master bath spa, weekend, weekly or monthly rates. 486-9335.

Lease: CLC 1 BR condo, appliances, microwave, W/D connections, FPL, tennis, exercise room, etc., 1 wk. free. Jim Briley, x2546 or 488-7901.

Rent: Colorado ski resort timeshare, Beaver Creek, all amenities, Jan. 4-11 & Jan. 11-18, \$600/wk. D. Smith, x6455 or 280-0027.

Lease: Friendswood 1 BR condo, w/loft, SC oven, microwave, ref. w/icemaker, enclosed garage, ready now, \$425/mo. + deposit. Janet, 668-7700 or 980-2419.

Lease: Pearland/Dixie Hollow 3-2-2, fenced, FPL, new paint, split BR, formal dining, front porch, \$550/mo. 482-6609.

Sale: 4 cottages near Galveston Bay, furn., \$49,500, 10% down, balance financed at 11% for 15 yrs. 339-1951.

Sale: 4-2-2 in Austin, AC, FPL, pool, wooded southside lot, Barton Hills area, 10 min. from downtown, vacant Nov. 15, \$180,000. (512) 445-7313.

Sale: Countryside North 3-2.5-2, two story, \$55,850. Ted, x7484 or 554-7234.

Sale: Lakefront lot, Brazoria Cty., access to fishing, golf, swimming, tennis, 12% assum. Don, 280-6307 or 554-6205.

Sale: Gatsby 1-1-1 condo, near College of Mainland, all mjr. appliances, new, \$360/mo. Valerie, x2208 or (409) 935-1149.

Sale: League City Meadowbend 3-2-2, fenced, FPL, microwave, DW, assume FHA, \$1,200 down. Burke, 280-4364 or 538-3315.

Lease: Heritage Park/Friendswood 3-2-2, new paint, fenced, discount rental fee, \$525/mo. 488-6309.

Lease: Barringer Knoll 2-1, fan, W/D hookup, \$330/mo. + \$200 deposit. 480-6742.

Sale: 100-acre ranch, old house, buildings, tractor, etc., fruit trees, \$815/acre, owner finance. 488-8105.

El Lago 4-3-2 English Tudor on wooded lot, near lake, 2,680 SF, master down, screened porch, workshop, ready now, \$112,000. 554-4530.

Lease: Annalea/Friendswood 4-2, near school/shopping, lg. corner lot, new paint and fans, \$515/mo. + deposit. James, x5595 or 486-0410.

Lease: Baywind II condo, lg. 1-1, new carpet/paint/fans, W/D, FPL, pool/tennis, \$315/mo. + deposit. James, x5595 or 486-0410.

Lease: Pebblebrook Condo, El Lago, 1BR, 2nd flr., W/D, \$310/mo. + dep. Lindemann, 488-3300 or 532-2218.

Sale: Seabrook 3-2-2, white brick, Baybrook Subd., redecorated, microwave, FPL, fenced, \$57,500. 326-1944.

Lease: League City 2-1-1, large corner lot, 3 yrs. old, excel. cond., quiet neighborhood, \$450/mo. + dep. 554-2956.

Sale/lease: Oakbrook 3-2-2, inground pool, on golf course, \$690/mo. Tom, 480-5027.

Heavily wooded lot, 75' x 150' with view of Taylor Lake, all utilities available, \$21,500. 474-3181.

Cars & Trucks

'80 Buick Skylark, loaded, original owner, excel. cond., \$3,450. 474-3839.

'81 280 ZX, GL, auto, T-tops, leather, tinted glass, 37K mi., immaculate, \$9,800 OBO. Michael, x5576 or 484-7527.

'82 Chevy S-10 Tahoe, longbed, V6, 4-spd. cruise, AC, PS, PB, AM/FM/cassette, new tires, excel. cond., below NADA ave. 482-1535.

'84 Chevy custom van, all the extras, showroom condition, \$15,300. 474-3181

'78 Toyota Corolla, new tires and battery, good running condition, \$975. 474-3181.

'84 Chevy Cavalier, 4-dr., 4-cyl., 4-spd., AC, low miles, assume GMAC loan. Mavis, x7451.

'78 Olds Cutlass Supreme, light blue, stereo, AC, cruise, new tires, rebuilt auto trans., one owner, good cond., 82K mi., \$1,800. John, 480-4359.

'73 Ford Gran Torino wagon, blue, PS, PB, AC, auto, radio, good cond., dependable, \$900. 482-2527.

'81 Ford F150 pickup, 1/2 ton, 1 owner, longbed, AC, auto, PS, V-8, 2 tanks, \$2,995/trade. 280-0454.

'84 BMW 325E, excel. cond., 2-dr., 5-spd., elec. sunroof, Alpine stereo & computer sys., assume payments. Beth, x4048 or 484-5899.

'81 Nissan Sentra, 2 dr., 5-spd., AC, AM/FM/cassette, silver, ex. cond., \$5,500 OBO. Kellie, x4691 or 484-5508.

'76 Fiat X1/9, 4-spd., AM/FM/cassette, appliance mags, Mediterranean blue, good cond. Ken, x4778 or 534-2634.

'78 Ford F150 truck, AC, new tires, Lear shell, runs well, \$2,195. 946-7548.

'82 GMC truck, 1/2 ton stepside, PS, PB, AC, \$4,800. Al, x4823 or 331-0608.

'80 Trans Am turbo, T-tops, needs engine work, \$2,000. Jerry, x2576 or 554-6093.

'77 Toyota Corona, 4-dr., clean, no dents, auto, AC, stereo, new speakers, nearly new tires, \$2,400. Briggs, x5165 or 333-2717.

'73 Pontiac Catalina, AC, runs well, \$600. Crum, x2263.

'83 Pontiac Bonneville, 4-dr., V-8, many extras, ex. cond., \$6,675. Mike, 280-8403.

'73 Mercedes 220D Diesel, 25+ MPG, ex. cond. in & out, recent overhaul, \$4,950. Jones, x5879 or 532-3347.

'71 Mercedes 250, ex. cond., inside still like new, recent overhaul, \$3,800. Jones, x5879 or 532-3347.

'77 Lincoln Town Coupe, ex. cond. for car this age, all extras work, \$2,300. Mandell, x6557 or 532-2374.

'83 Mazda truck, B-2200 diesel, 38+ MPG, Lear shell, AM/FM/tape, 37.5K mi., 50K warranty on power train. Jim, x4241 or 486-4113.

'77 Mercury Cougar XR-7, loaded, one owner, 2 dr., ex. cond., \$2,250. 474-3839.

'81 Pontiac Firebird, V-6, auto, PS, PB, AC, tilt, AM/FM/tape, very nice, \$3,550. McNeely, x6347 or 482-5837.

'78 Toyota Corolla, mint, new paint, JVC sound sys. w/4 spkrs., \$3,000 OBO. Jeff Williams, x5841.

'81 Mustang hatchback, 4 cyl., auto, PS, PB, AC, AM/FM, ex. cond., \$2,950. 474-3507.

bicycle, 3-spd., ex. cond., \$45. Bays, x4031.

Boy's dirt bicycle, 20", \$40; girl's 3-spd. bike, 24", \$45. Coan, x5212 or 488-1028.

'75 Honda 750F Supersport, low miles, ex. cond.; '85 Wetbike, 800cc. Bullock, 326-4949.

Audiovisual & Computers

5" B&W portable TV, AM/FM radio combo, \$50. Adam, 486-0581.

Dokorder stereo tape deck, 10.5" reel-to-reel, Model 1120, many features, used approx. 100 hrs., \$350. 334-1934.

Pioneer stereo system, glass-front cabinet, 2 spkrs., turntable, amp., equalizer, tuner, cassette deck, new, \$700. Chuck, x4241 or 487-2978.

Kenwood TS-520 transceiver ham radio, like new, w/CW crystal filter, \$375. Chuck, x4241 or 487-2978.

Zentih 25" table model color TV, on legs, works well, \$125. 476-0905.

Tandy 200 portable computer, CCR82 computer rcd., AC adapters, printer & modem cables, extras, \$450. Tom Clark, x7445.

JVC KS-R75 cassette car receiver, 22 w/ch., 12 pushbuttons, auto scan/seek, Dolby B, BiPhonic processor, preamp outputs, all manuals, \$100. Tom, x7445.

TI home computer, 99/4A, w/cassette and lots of software, \$100. 482-7873.

Commodore composite color monitor, ex. cond., \$135. Gary, x2191 or 482-1290.

Cobra 25GTL CB radio, 40-channel, antennas included, \$75. Ed, x5489 or 480-0273.

Realistic DX-200 receiver short wave, excel. cond., \$180. John, 480-4359.

TI 99/4A computer, dust cover, cassette cables, used little, make offer. Glenda, x3341 or 482-2157.

Atari 800 computer, 810 disk drive, 850 interface, printer, extra paper, CRT, over 40 games & programs, \$1,500. Robin, 333-1709.

Household

Foam backed draperies, 72" x 61", burnt-orange, like new, \$10. Ed, x5489 or 480-0273.

Kenmore gas dryer w/gas line hook-ups, runs and looks good, \$100; airline pet carrier, \$40. Dave, x3486 or 338-2368.

Antique dining room table & 4 leather covered chairs, \$450; antique dining room bench, \$250; Victorian antique bedroom set, bed, dresser, 2 marble top tables, desk, \$3,200. 488-5564.

Quartz electric clock on large wood cut, \$50; 100 National Geographics, \$25. 488-5564.

Whirlpool AC window unit, 18K BTU, 240 volt, new blower fan, filter drier & freon, \$200. Jesse, x3861 or 481-0570.

Queen size sleeper sofa and rocking chair, \$125 OBO. 334-4894.

Eureka vacuum cleaners, like new, \$40 ea. Duane, x6393.

Two love seats, gold, ex. cond., \$200. Briggs, x5165 or 333-2717.

Rolltop desk, metal base student desk, secretary chair, office chair, early American barstool. 480-2776.

Antique oak dresser, Empire style, \$325; antique oak bed, \$100. Rich, x6128 or 482-9212.

Mahogany ladies desk, \$200, mahogany coffee table, \$50. Rich, x6128 or 482-9212.

Penny's gas range, electric start, continuous clean, almond, good cond., \$200. 486-7315.

Metal/wood 64" office desk, bookcase w/light, \$60 ea. Michael, x5576 or 484-7527.

Sealy reg. size mattress & box springs, good cond., \$60; solid oak twin headboard, bed side table, bureau w/mirror, \$250 OBO. 486-8551.

Admiral refrigerator, gold, like new, \$350 or trade for VCR, computer or microwave of like value. Rusty, x4691 or 486-5581.

Two twin beds, French provincial, mattress, box springs and frames, \$100 ea.; 4 antique maple cane bottom chairs, refinished, \$75 ea. Robin, 333-1709.

Penny's microwave oven, 650 watt, 10 pwr. levels, temp. probe, programmable, \$200. 532-3515.

Antique Singer sewing machine, \$150. Ed Boddy, x6108 or 944-9340.

Brand new water purifier, hooks to kitchen faucet, \$110. Sue, 280-6849.

Photography

Minolta X-370, 135mm telephoto lens, flash, has water damage, sell or pay for repair. Antonio, 280-2113 or 280-9408.

Canon AE-1 body, dead chip —

doesn't work, 50mm f/1.8 lens, \$30. Sara, x4794 or 333-4751.

Musical Instruments

Ludwig bell and drum set, excel. cond., \$250. 488-8105.

Wanted

Want 16mm mopix editing equipment: splicer (cement), viewer, frame counter, etc. Terry White, 332-5177.

Want manufacturer's service manual (not owner's manual) for 1981 VW Dasher diesel. Barr, x4871.

Want portable electric typewriter. Alzena, x2576 or 996-9033.

Want piano player for 18-pc. band, must be able to read and improvise, provide own piano. Ray, x6327 or 554-5434.

Want electric trains. Don Jeffers, x2449.

Want roommate for 3 BR home in League City, furnished, TV/cable, no smoking/pets/children, full privileges, \$210/mo., bills paid. Keith, x3643 or 332-8251.

Want roommate to share 3-2 home in Forest Bend, 10 min. to NASA, non-smoker pref., no pets, \$215/mo. + util. Kristen, x3803 or 996-7564.

Want piano, prefer upright. 333-6241.

Want to babysit 1 to 2 yr. old in my home, Christian home in Camino South. 486-5094.

Want soprano sax, good condition. Ray, x5257 or 554-2908.

Miscellaneous

Portable kerosene heater, 20K BTU, \$35; kingsize waterbed, headboard, good cond., \$65. 482-6609.

18' Sears round above ground pool, liner, sand filter, pump, new pressure gauge & coping, good condition, bargain at \$450, Shannon, x2755 or 331-6260.

Four 14" rims, \$5 ea.; Honda Prelude exhaust sys., \$75. Michael, x5576 or 484-7527.

Shortbed camper shell, tinted, screened, interior & running lights, \$100. Kohanke, x2791.

Girl's clothes, sz. 8 & 10, boy's clothes, sz. 4 & 5, good variety, ex. cond., reasonable. 488-6521.

Basketball rim, backboard and heavy duty post, \$50. Dorothy, x2501 or 482-1505.

Two bundles cedar ridge rows, \$20; 86 sq. yd. carpet w/pad, best offer. 474-4885.

Trimline foldup exercise bike, speedometer/odometer, padded seat, nearly new, \$50. Hank, x5031 or 534-2021.

Cookin' in the Cafeteria

Week of Week of November 11 — 15, 1985

Monday — Veteran's Day Holiday.

Tuesday — Split Pea Soup; Salisbury Steak, Shrimp Creole, Fried Chicken (Special); Mixed Vegetables, Beets, Whipped Potatoes.

Wednesday — Seafood Gumbo; Fried Catfish w/Hush Puppies, Braised Beef Rib, BBQ Steak, Wieners & Beans, Shrimp Salad, Stuffed Bell Pepper (Special); Corn O'Brian, Rice, Italian Green Beans.

Thursday — Chicken Noodle Soup; Beef Stroganoff, Turkey & Dressing, BBQ Smoked Link (Special); Lima Beans, Buttered Squash, Spanish Rice.

Friday — Seafood Gumbo; Broiled Turbot, Liver & Onions, Fried Shrimp, Meat Sauce & Spaghetti (Special) Green Beans, Buttered Broccoli, Whipped Potatoes.

Week of Week of November 18 — 22, 1985

Monday — Beef & Barley Soup; Beef Chop Suey, Breaded Veal Cutlet w/Cream Gravy, Grilled Ham Steak, Wieners w/Baked Beans (Special); Buttered Rice, Brussels Sprouts, Whipped Potatoes. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Celery Soup; Fried Shrimp, Pork Chop w/Applesauce, Turkey a la King, Chinese Pepper Steak (Special); Au Gratin Potatoes, Breaded Squash, Buttered Spinach.

Wednesday — Seafood Gumbo; Fried Catfish w/Hush Puppies, Braised Beef Ribs, Mexican Dinner (Special); Spanish Rice, Ranch Beans, Buttered Peas.

Thursday — Green Split Pea Soup; Corned Beef w/Cabbage & New Potatoes, Chicken & Dumplings, Tamales w/Chili, Hamburger Steak w/Onion Gravy (Special); Navy Beans, Buttered Cabbage, Green Beans.

Friday — Seafood Gumbo; Deviled Crabs, Broiled Halibut, Liver & Onions, BBQ Link (Special); Buttered Corn, Green Beans, New Potatoes.

Week of November 25 — 29, 1985

Monday — French Onion Soup; BBQ Sliced Beef, Parmesan Steak, Spare Rib w/Kraut, Chili & Macaroni (Special); Ranch Style Beans, English Peas, Mustard Greens. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Split Pea Soup; Meatballs & Spaghetti, Liver & Onions, Baked Ham w/Sauce, Corned Beef Hash (Special); Buttered Cabbage, Cream Style Corn, Whipped Potatoes.

Wednesday — Seafood Gumbo; Cheese Enchiladas, Roast Pork w/Dressing, BBQ Link (Special); Pinto Beans, Spanish Rice, Turnip Greens.

Thursday — Thanksgiving Holiday

Friday — Seafood Gumbo; Fried Shrimp, Baked Fish, Beef Stroganoff, Fried Chicken (Special); Okra & Tomatoes, Buttered Broccoli, Carrots in Cream Sauce.



Boats & Planes

Sale: 1/5th share in Grumman Tiger, 180 HP, 4-place, 150 MPH, sell for 1/2 value of low equity. George Wells, 482-2313.

'80 Monark bass boat, 50 HP Evinrude, troll mtr., depth finder, galv. Dilly trailer, \$4,000. Don, 280-6307 or 554-6205.

Atomic 4 marine engine, completely rebuilt, \$1,000. Ted White, x2068 or 474-2214.

Chrysler 75 HP OB motor, good running condition, w/controls, new prop, \$450. Gene, x5893 or 488-5162.

14' MFG Gypsy, fiberglass, 25 HP Evinrude, Sportsman trailer, swivel seats, bait well, offset ctr. console, low hours, \$1,600. 337-6172.

Sportcraft, 23', 165 HP I/O. ex. cond., many extras, \$5,500. Bill, 486-0581.

Exhaust elbows and manifolds for Mercruiser 350 engine, elbows less than 1 yr. old, \$300. Ed, x6373 or 473-2709.

14' catamaran w/trailer, trailer in good shape, cat needs new sail, \$600. Karl, x2323 or 333-3544.

Cycles

'71 Honda CB450, 2,400 mi., Wixom fairing, crash bars, carrier, mint, \$1,100. 486-9335.

'85 Honda 250SX 3-wheel, like new, \$1,500. Lisa, x5595 or (409) 925-5734.

20" Super Mongoose boy's bicycle, like new, all chrome, cost \$320, now \$150. McNeely, x6347 or 482-5837.

'81 Yamaha SR250, 2K mi., like new, runs well, \$600; two helmets, \$20 ea. Dave, x3486 or 338-2368.

26" men's 10-speed all terrain bike, low miles. 488-2822.

Men's 5-spd. bicycle, \$65. 488-5564.

Sears 24" Free Spirit woman's